

ELORA

**water pollution
control plant**

1968

TD
227
E467
W38
1968

c.1
a aa

ATORY LIBRARY
RESOURCES COMMISSION

ARY COPY

L 30 1969

ARIO WATER
CES COMMISSION

ONTARIO WATER RESOURCES COMMISSION

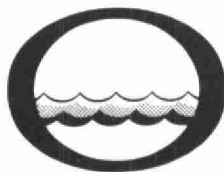
Division of Plant Operations

Copyright Provisions and Restrictions on Copying:

This Ontario Ministry of the Environment work is protected by Crown copyright (unless otherwise indicated), which is held by the Queen's Printer for Ontario. It may be reproduced for non-commercial purposes if credit is given and Crown copyright is acknowledged.

It may not be reproduced, in all or in part, for any commercial purpose except under a licence from the Queen's Printer for Ontario.

For information on reproducing Government of Ontario works, please contact ServiceOntario Publications at copyright@ontario.ca



Water management in Ontario

Ontario
Water Resources
Commission

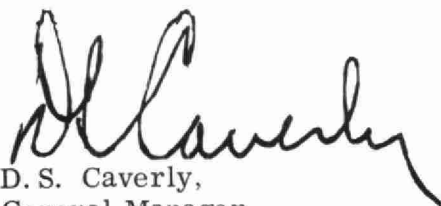
135 St. Clair Ave. W.
Toronto 7
Ontario

We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.


Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.



D. S. Caverly,
General Manager.



D. A. McTavish, P. Eng.,
Director,
Division of Plant Operations.

LIBRARY COPY

JUL 30 1969

ONTARIO WATER
RESOURCES COMMISSION

TD
227
E467
W38
1968
MOE

ASVO





Environment Ontario
Laboratory Library
125 Resources Rd.
Etobicoke, Ontario M9P 3V6
Canada

ONTARIO WATER RESOURCES COMMISSION

CHAIRMAN

Dr. James A. Vance

VICE-CHAIRMAN

J. H. H. Root, M. P. P.

COMMISSIONERS

H. E. Brown

D. A. Moodie

L. E. Venchiarutti

GENERAL MANAGER

D. S. Caverly

ASSISTANT GENERAL MANAGERS

L. E. Owers

K. H. Sharpe

F. A. Voegel

A. K. Watt

COMMISSION SECRETARY

W. S. MacDonnell

DIVISION OF PLANT OPERATIONS

Director

D. A. McTavish

Assistant Director

C. W. Perry

Regional Supervisor

A. C. Beattie

Operations Engineer

B. W. Hansler

135 St. Clair Avenue West
Toronto 7

ELORA
water pollution control plant

operated for

THE VILLAGE OF ELORA

by the

ONTARIO WATER RESOURCES COMMISSION

1968 ANNUAL OPERATING SUMMARY

FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

CONTENTS

Title Page i

Foreword ii

'68 Review 1

Project Costs 2

Operating Costs 3

Process Data 5

Conclusions Inside back cover

'68 REVIEW

During 1968 a total flow of 29 million gallons of sewage was treated at a cost of \$7,647 or \$261.09 per million gallons. The cost per pound of BOD removed rose from 12 cents in 1967 to 19 cents in 1968.

The average BOD and suspended solids concentrations in the influent were 140 mg/l and 220 mg/l respectively compared with 240 mg/l and 447 mg/l in 1967. The effluent BOD and suspended solids concentrations of 5 mg/l and 8 mg/l respectively were well within the OWRC objective of 15 mg/l for each and indicate excellent treatment. The removal efficiency was 96% for both BOD and suspended solids.

During the year, both the Elora and Fergus WPCPs were operated by plant staff stationed at Fergus. Under the supervision of head office engineers, the staff operated a clean, attractive and efficient plant for the Village of Elora.

PROJECT COSTS

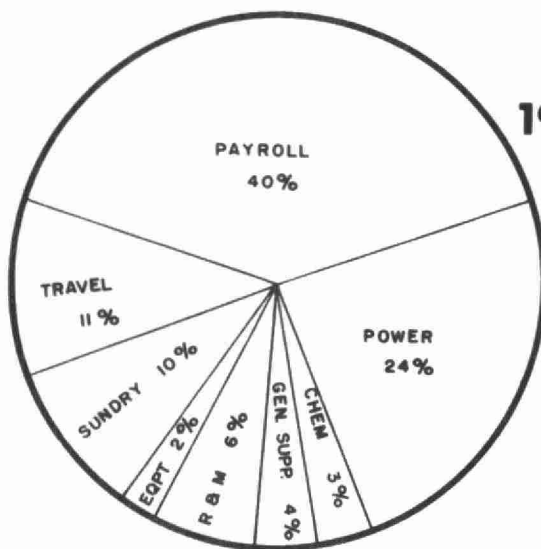
NET CAPITAL COST (Final)		\$361,285.04
DEDUCT - Payments from Municipalities	\$ 41,231.20	
- Portion Financed by CMHC-MDLB (Final)	<u>122,424.66</u>	<u>163,655.86</u>
Long Term Debt to OWRC		<u>\$197,629.18</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968		\$ <u>20,718.87</u>
Net Operating		\$ 7,647.34
Debt Retirement		3,988.00
Reserve		1,969.13
Interest Charged		<u>11,095.58</u>
TOTAL		\$ <u>24,700.05</u>

RESERVE ACCOUNT

Balance at January 1, 1968	\$ 7,905.87
Deposited by Municipality	1,969.13
Interest Earned	510.42
	<u>\$ 10,385.42</u>
Less Expenditures	<u>50.08</u>
Balance at December 31, 1968	\$ <u>10,335.34</u>

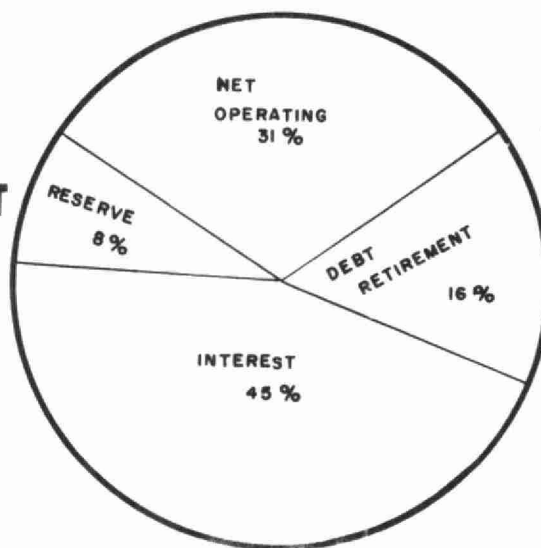
Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAY ROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	WATER	TRAVEL
JAN	324.19	147.94	-	-	155.85	-	8.27	-	-	12.13	-	-
FEB	535.76	212.35	-	-	184.35	-	10.05	-	21.17	50.72	-	57.12
MAR	503.91	223.74	-	-	203.10	-	1.37	-	-	21.94	-	53.76
APRIL	294.46	-	-	-	142.85	-	39.41	-	38.00	12.60	-	61.60
MAY	693.36	299.55	-	-	198.10	-	48.11	-	78.46	12.02	-	57.12
JUNE	724.58	229.21	-	-	110.35	-	-	-	30.03	270.99	-	84.00
JULY	937.51	414.11	-	-	120.10	-	62.29	169.78	77.80	36.31	-	57.12
AUG	735.29	375.81	-	-	136.35	-	14.84	-	-	143.33	-	64.96
SEPT	537.75	311.72	-	-	-	-	16.13	-	-	26.46	-	83.44
OCT	739.22	216.71	-	-	299.51	-	83.91	-	36.50	14.75	-	87.84
NOV	849.42	257.81	-	-	143.24	247.28	13.62	-	3.73	117.74	-	66.00
DEC	771.89	138.34	138.72	-	129.76	-	5.61	-	211.73	13.33	-	134.40
TOTAL	7647.34	2927.29	138.72		1823.56	247.28	303.61	169.78	497.42	732.32	-	807.36



1968 OPERATING COSTS

TOTAL ANNUAL COST



Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1965	13.11	\$6,679.39	\$509.45	32 cents
1966	18.14	6,508.59	358.76	16 cents
1967	23.57	6,370.25	270.24	12 cents
1968	29.29	7,647.34	261.09	19 cents

Process Data

The diffusers which had been installed in 1967 were replaced with the original sparjers after the diffusers repeatedly became plugged. Removal efficiencies increased to 96% for both BOD and suspended solids from 92% and 95% respectively.

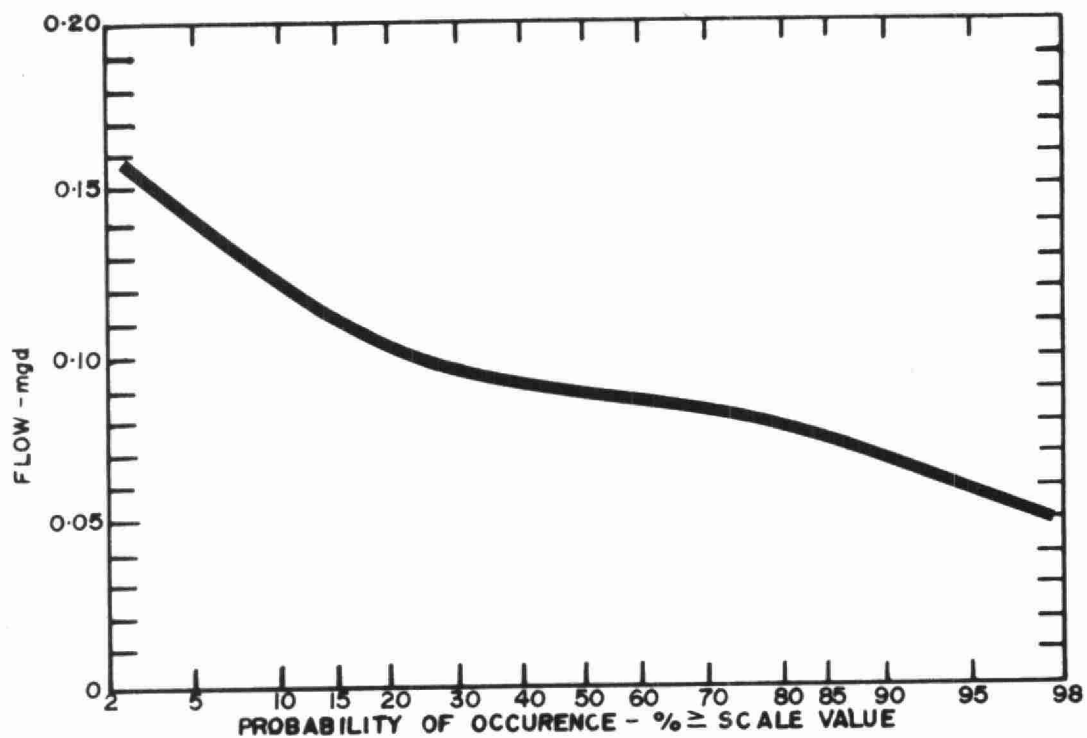
PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED lbs.	DOSAGE mg/l
JAN	2.84	.092	.140	.032	118	4.4
FEB	2.06	.071	.071	.071	42	2.0
MAR	2.20	.071	.071	.071	58	2.6
APR	2.13	.071	.071	.071	78	3.7
MAY	2.45	.079	.192	.058	87	3.6
JUN	2.13	.071	.071	.071	82	3.8
JUL	2.89	.093	.150	.054	65	2.2
AUG	2.82	.091	.166	.056	67	2.4
SEPT	1.86	.062	.083	.005	81	4.4
OCT	2.28	.073	.154	.011	113	5.0
NOV	3.08	.103	.189	.028	69	2.8
DEC	2.54	.082	.118	.031	-	-
TOTAL	29.29	-	-	-	-	-
AVERAGE	-	.080	-	-	78	3.2

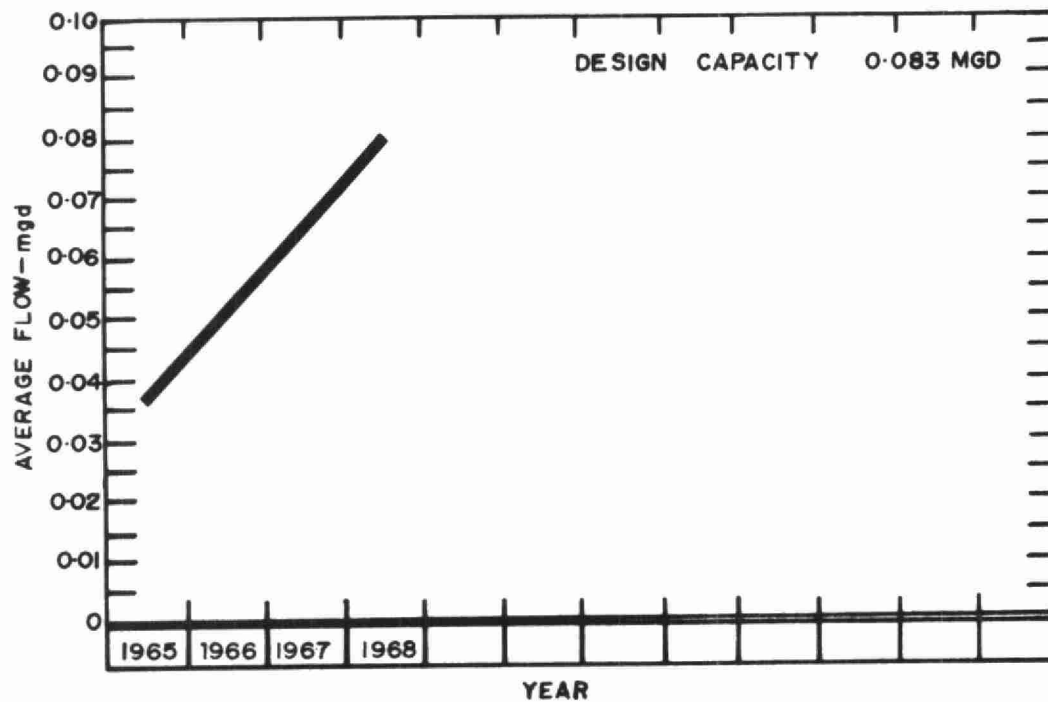
COMMENTS

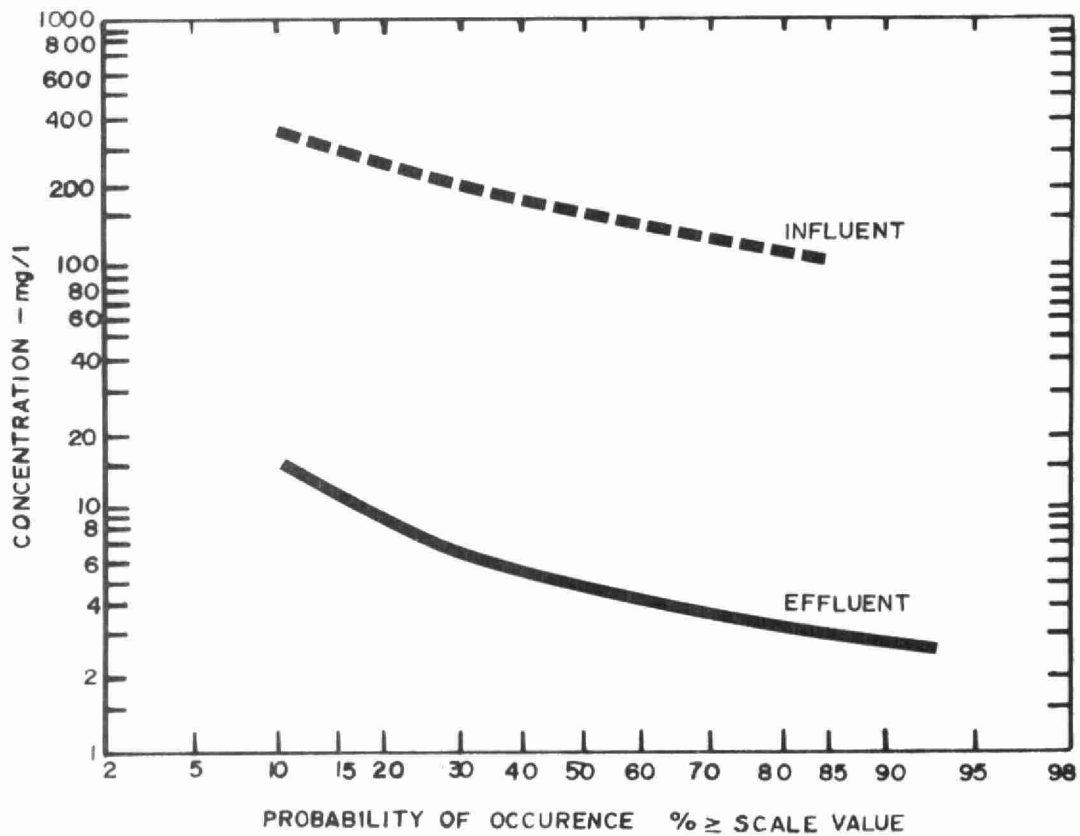
The average daily flow of 0.080 mgd was 96% of the design flow of 0.083 mgd. The maximum daily flow of 0.192 mgd occurred in May. A total of 29 million gallons was treated during the year. Problems with the flow meter during the year meant that some monthly flows had to be estimated.

The average chlorine dosage rate of 3.2 mg/l was sufficient to maintain a chlorine residual of 0.5 mg/l in the effluent.

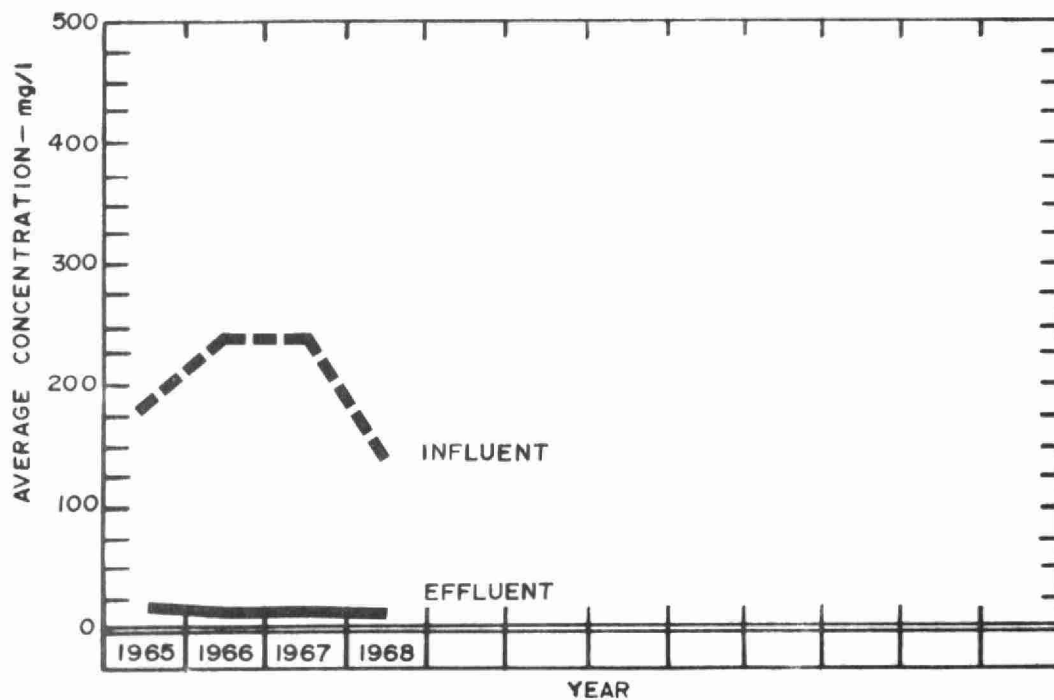


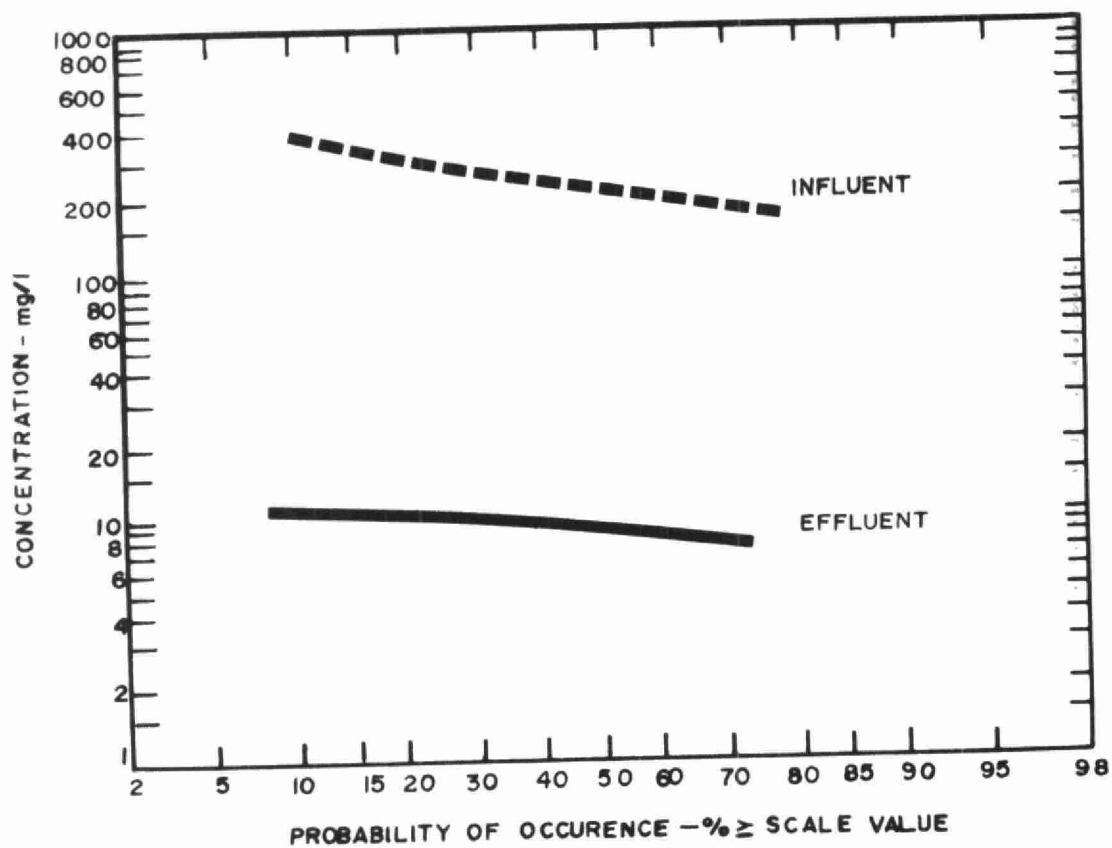
FL O W S



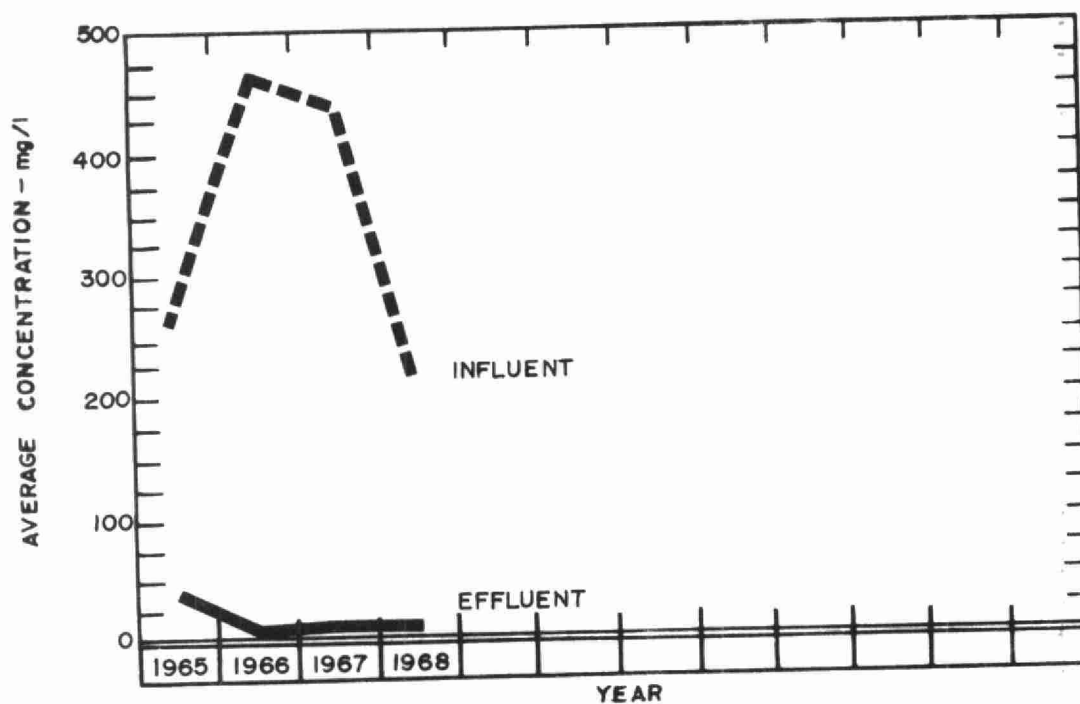


BIOCHEMICAL OXYGEN DEMAND





SUSPENDED SOLIDS



PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ³ lb	INF CONC ^N mg/l	EFF CONC ^N mg/l	RED ^N %	REMOVAL 10 ³ lb	REMOVAL ft ³
JAN	76	16	79	1.70	168	9	95	4.52	5
FEB	147	4	98	2.99	161	8	95	3.15	15
MAR	305	6	98	6.59	216	7	97	4.60	11
APR	82	3	96	1.68	126	11	91	2.45	13
MAY	115	3	97	2.04	278	6	98	6.66	4
JUN	-	-	-	-	-	-	-	-	11
JULY	75	5	93	2.02	131	6	95	2.06	-
AUG	230	4	98	6.38	392	6	98	10.88	8
SEPT	90	2	98	1.64	286	10	96	5.13	6
OCT	-	-	-	-	-	-	-	-	8
NOV	-	-	-	-	-	-	-	-	12
DEC	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	-	-	-	-	-	-
AVERAGE	140	5	96	3.13	220	8	96	4.93	93

COMMENTS

The reductions of 96% for both BOD and suspended solids indicate excellent treatment. An average of 9.3 cu. ft. of grit was removed each month during 1968.

AERATION

MONTH	AVERAGE FLOW mgd	INFLUENT		SECONDARY EFF		MLSS CONC ^N mg/l	F/M $\left(\frac{\text{lb BOD}}{\text{lb MLSS}}\right)$	AIR USED $\left(\frac{1000 \text{ ft}^3}{\text{lb BOD}}\right)$ REMOVED	WASTE SLUDGE lb
		BOD CONC ^N mg/l	SS CONC ^N mg/l	BOD CONC ^N mg/l	SS CONC ^N mg/l				
JAN	.092	76	168	14	6	4950	.02	5.30	-
FEB	.137	147	161	6	5	5070	.02	3.02	-
MAR	.131	305	216	3	2	5760	.04	1.41	-
APRIL	.131	82	126	5	17	5570	.01	5.49	-
MAY	.079	115	278	2	10	6120	.02	3.39	-
JUN	.113	-	-	-	-	3000	-	-	-
JUL	.093	75	131	3	6	5530	.02	3.92	-
AUG	.091	230	392	3	5	5100	.06	1.46	-
SEPT	.062	90	286	1	4	4510	.02	5.49	-
OCT	.073	-	-	-	-	3970	-	-	-
NOV	.103	-	-	-	-	5150	-	-	-
DEC	.083	-	-	-	-	5450	-	-	-
TOTAL	-	-	-	-	-	-	-	-	-
AVERAGE	.080	140	220	5	7	4765	.03	3.69	-

Date Due

TD/227/E467/W38/1968/MOE #1
 Ontario Water Resources Co
 Elora water
 pollution control plant: asvo
 1968 operating c.1 a aa
 Summary



Environment Ontario

Laboratory Library
 125 Resources Rd.
 Etobicoke, Ontario M9P 3V6
 Canada

LABORATORY LIBRARY
 ONTARIO WATER RESOURCES COMMISSION

LABORATORY LIBRARY

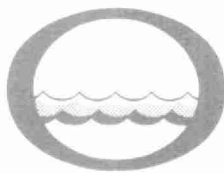


96936000119495

CONCLUSIONS

The plant was operated efficiently during 1968, providing excellent treatment with effluent BOD and suspended solids concentrations well within the OWRC objectives.

The present staffing arrangement should be maintained. The flows have increased each year of operation and the plant is now at its design capacity. Expansion should be considered in the near future.



Water management in Ontario